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ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
LIOU, JONATHAN	

ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,234	JIN ET AL.	
	Examiner	Art Unit	
	Jonathan Liou	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01/20/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office action is in response to applicant's paper filed 9/27/2005. Claims 1-20 as amended are currently pending in the application. Applicant has amended claims 1-18, and added claims 19-20. Claims 1-20 are rejected.

Claim Objections

1. Claim 12 is objected to because of the following informalities: The program is not claimed as embodied in a computer-readable media or apparatus, which does not permit the computer program product to be realized. The examiner suggests the applicant to change on line 1-2 of claim 12 to the following:

A computer program embodied in a computer-readable media to execute a map generation method, the method comprising:

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Since two references written by the same author are cited in the office action, the following conventions for those references will be used throughout this office action.

Reference A of Niederost: Detection and reconstruction of buildings for a 3-D landscape model of Switzerland.

Reference B of Niederost: Reliable reconstruction of buildings for digital map revision.

Both references have been on the web for public searching since 04/09/2000. The date of updating website has been attached with the references in the form 892.

4. Claim 1-5, 7-11, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference A of Niederost, and in view of Kacyra et al. (US Pat No. 6,619,406.)

5. In regards to claims 1 and 19-20, the reference A of Niederost teaches the regions of interest and shows a project image space which would perform the same functions as an image appointment unit and a vector generation unit recited in the claim 1, and Niederost further teaches a bold detection and coarse building reconstruction section, which serves the same functions as polygon extraction unit recited in the claim 1. Niederost shows extracting a polygon line of the surface of roof to demonstrate his design model (see page 6-7.), which would extract a polygon line of extracted building region as claimed.

Niederost teaches the region of interest (see page 3 and Fig. 4), and teaches finding a building region based on a result of classification of the color around the pixel, which is one position in a selected interested region, and the surface of building region would be found, which is setting the extracted pixels as an extracted building region as claimed. (See Fig. 6-7, and page 4.) Niederost shows an outline of the building region

and roof on Fig. 13 and Fig. 14 as extracts a polygon line of the extracted building region. The Fig 9. of the reference A shows that the roof surface is determined, and a vector of the polygon line of the roof surface. Niederost doest not specifically teach a user appointment of a least one position in a building; however, Kacyra et al. teach the user selects the desired measurement area and measurement point spacing then, a detailed 3-D geometry of exposed surfaces is remotely captured in the form of point cloud (See col 1, lines 26-34, Kacyra et al.), and system is manually since it's selected by the user. The Niderost's system is automatically (See conclusion, page 8, Niederost.) Thus, it would have been obvious to one who have ordinary skill in the art when the time the invention was made to have a user to appoint a position on the region of interest part because Kacyra et al. teach the method is to identify a location of interest from data and illuminating a location at the site corresponds with the location of interest (See col 2, lines 11-14.)

6. In regards to claim 2, Niederost shows the coarse building reconstruction that analyzes color around the appointed position (see page 4, Fig. 6 and 7.) He demonstrated that K-mean classification, which performs the function of determining the sample color for matching (see page 4.) Also, he shows that the threshold in page 2, 3, and 6, and a region searching range in page 4. He shows that extracting the building region pixels based on a result of discriminating a similarity between a color of a roof of a building in the region searching range and the adjacent pixels (the sample color for matching.) (See page 4-6.) Finally, he shows extracting a line around the roof region pixels as the polygon line (see Fig.9 and pages 5-6.) Following Niederost, in view of

Kacyra et al., the same rationale, basis, and motivation as applied to claim 1 above in the office action, Niederost, in view of Kacyra et al., shows all the limitation recited in the claim 2.

7. In regards to claim 3, the classification in the reference of Niederost teaches that the classification is used to determine groups of adjacent pixels of predetermined region (see page 4 and Fig. 5-7.) He further shows the region including the appointed position (Fig.5), which there are sample colors for matching and the region searching range inside (see page 4 and Fig. 7), and filtering systems including the threshold value. He explains extracting a plurality of pixels from above region are based on a result of statistically analyzing color of the plurality of pixels (see page 4-6.)

8. In regards to claim 4, Niederost introduces the morphological filtering using the operation closing (=dilatations followed by erosions) that performs the same limitations recited in the claim 4 (see page 4 and Fig. 7.)

9. In regards to claim 5, Niederost teaches the edges calculation. First the low level image processing was applied using the Canny operator followed by calculation of contour graphs, and only straight edges with a length is greater than 7 pixels were accepted. Then, the building shape can be reconstruct and draw the boundary lines are drawn to correct the extracted building region as shown on Fig.9-10 (see page 5-6.) Hence, Niederost teaches the limitation recited in the claim 5.

10. In regards to claim 7, Niederost teaches the correcting the polygon line to one of a straight line and lines crossing each other at a predetermined angle (see page 6.)

11. In regards to claims 8-9, Fig. 9 in the reference A of Niederost shows a line of a building roof corresponds to a predetermined integration pattern. The Fig 9 shows the building region appointed by a plurality of input vectors (positions). Therefore, Niederost also shows all the limitations recited in claim 8-9.

12. In regards to claim 10, the reference A of Niederost teaches all the limitations recited in the claim 1, and he shows the building obliquely on the aerial photograph (see Fig. 2, and 3.) Further, he teaches the vegetation as the distortion due to a height of the building, and demonstrates the method to eliminate those vegetations (see page 3.) Finally, he shows the projection of a building polygon shape onto an image space (see pages 5-6, reference A of Niederost.), which could be interpreted as a ground as claimed. Hence, Niederost teaches all the limitations recited in the claim 10.

13. In regards to claim 11, the reference A of Niederost teaches that the roof region are projected and the wall of the roof region are also projected onto the DHM25 (see page 6), which is derived from the contour lines of topographic maps by interpolation (see page 2.) In other words, Niederost also teaches using his method to deliver the image onto the map. Therefor, he also shows the limitation addressed in the claim 11.

14. Claims 12-14 and 16-18 rejected under 35 U.S.C. 103(a) as being unpatentable over the reference A of Niederost, in view of Kacyra et al. as applied to claims 1-5 and 7-10 above, and further in view of Lin et al, "Building Detection and Description from a Single Intensity Image" Computer Vision and Image Understanding Vol 72, pgs. 101-121.

15. In regards to claims 12-14 and 16-18, Niederost, in view of Kacyra et al., teach all of the limitations as recited in the claims 1-5 and 7-10 of the Office Action. He does not explicitly teach the computer program product to perform those limitations that he has taught. Nevertheless, Lin et al. teaches that the map can be generalized by computing projected and perform an automatically system of detecting buildings to compute and correct an error (page 120, Lin et al.) Further, an automatically system needs to be perform through a computer system. Although Niederost does not explicitly teach the computer product to perform his map generation method, he mentions the commercial software (Phodis by Zeiss) to generate the map. The roof region would generate through the software (Phodis by Zeiss) and perform the methods of Niederost, in view of Kacyra et al.'s teaching on a computer product since Kacyra et al. teaches the user to selected the desired point for the region of interests (See col 1, lines 29-32, Kacyra et al.) and Lin et al. teaches that an automatically system to perform the method. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the method of Niederost, in view of Kacyra et al. by the computer program product because Lin et al. teaches the computer program product to perform his system (page 120, Lin et al.), and the functional purpose of Lin et al.'s system is the same as Niederost's method for generating the building map (page 101-120, Lin et al.)

16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A of Niederost, in view of Kacyra et al. as applied to claim 1 above, and further in view of Reference B of Niederost.

17. In regards to claim 6, Niederost, in view of Kacyra et al. teach all the limitations addressed in the claim 1 above in this office action. He only shows the rotating the line of the building region, and he lacks to show rotating of the building region as a whole so as to set the polygon line of the building region in a predetermined axis direction and smoothes the polygon line recited in claim 6. Nevertheless, Niederost teaches rotating and smoothing the building region on the reference B of Niederost (see pages 4-6, reference B of Niederost.) He teaches rotating the building region so as to set the polygon line of the building region in a predetermined axis direction (see pages 4-6, reference B of Niederost.) He further teaches the scaling to provide the smoothness of the lines of the building region (see pages 5-6, reference B of Niederost.) The reference B of Niederost is further describing a framework for automatic reconstruction of buildings in order to correct and update an initial 2-D vector data set and to derive a 3-D model for visualization (see page 1, reference B of Niederost.) Since the reference A describes an automatic reconstruction of building and tires to solve the same problem of building detection as the reference B, one would be motivated to combine Niederost's references. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the rotating and smoothing function of the building region on Niederost's reference because Niederost teaches that the rotating and smoothing of the building region is the framework of automatic reconstruction of buildings in the reference B of Niederost (see pages 1, and 4-6, reference B of Niederost), and the reference A of Niederost also teaches the method for reconstruction

of buildings (see page 1, reference A of Niederost.), and this would bring more functionalities to correct the building region.

18. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A of Niederost, in view of Kacyra et al., and in view of Reference B of Niederost as applied to claim 6 above, and further in view of Lin et al, "Building Detection and Description from a Single Intensity Image" Computer Vision and Image Understanding Vol 72, pgs. 101-121.

19. In regards to claim 15, the claim description is similar to claim 6. Both reference A and the reference B of Niederost teaches the method of improving detecting building region map; therefore, the same motivation as claim rejections 12-14 above in the office action to combine the teaching of the reference A, in view of Kacyra et al. and the reference B of Niederost, and further in view of the teaching of Lin et al are applied. Since the limitation recited in claim 15 is similar to claim 6, the same rationale, basis, and motivation for claim rejection as applied to claims 6, and 12-14 above in the Office Action are applied.

Response to Arguments

20. Applicant's arguments filed on 09/27/2005 have been fully considered but they are not persuasive.

The receives appointment of at least one position in a building from the user has been taught by Niederost, in view of Kacyra et al. (See 103 rejection regarding to claim 1.)

Setting an appointment position as a building region has also been taught by Niederost, in view of Kacyra et al. Niederost shows determining groups of adjacent pixels of the same class to separate roof segments, and after detection of the start pixel of a region, the search of adjacent pixels inside the correct blob shape is continued until no adjacent pixel of the same class is found (See sec. 5.1, page 4, Niederost.) Niederost further shows the roof surfaces is determined as shown in Fig. 7. Niederost does not only teaches k-mean classification and start pixel, and he also teaches searching of adjacent pixels inside the correct blob shape in order to capture the main roof surfaces as shown in Fig. 7. (See sec. 5.1, page 4 and Fig. 7, Niederost.)

Discriminating a color of a pixel around the building region to thereby expand the building region toward the vicinities also has been taught in Niederost reference A. Niederost teaches searching of adjacent pixels until none of the same class of pixels exist, and the build surface is created as Fig. 7. This method is discriminating the color are not belong to the building region (See sec 5.1, page 5, Niederost.)

In view of above-mentioned discussion, examiner believes the present claimed invention of applicant has been taught by the cited references.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Liou whose telephone number is 571-272-8136. The examiner can normally be reached on 8:00AM - 5:00PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RICKY Q. NGO
SUPERVISORY PATENT EXAMINER

Jonathan Liou

12/08/2005